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TITLE OF THE INVENTION

Back driving automatic brake system & automatic braking system for equipping in vehicle(s), airplane(s), ship(s), etc..

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Automatic braking system was formerly filed at US Patent and Trademark Office under reference cited:

[0002] Application Ser. no. 09/943,930 filing date Aug. 27, 2001 and Publication no: U.S. 2003-0038542 A1 date Feb. 27, 2003

[0003] Disclosure Document Deposit Request no: 528018 date Mar. 17, 2003

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH

[0004] "Not Applicable"

REFERENCE TO A MICROFICHE APPENDIX

[0005] "Not Applicable"

BACKGROUND OF THE INVENTION

[0006] Description creates range structures of Automatic braking system and Back driving brake system for purpose of fitting different types and structures of vehicle in automobile industry.

Back driving automatic brake system is newly developed to the point that back driving can well be averted accident but vehicle(s) do not possess such system.

BRIEF SUMMARY OF THE INVENTION

[0007] Automatic braking system(s) and Back driving automatic brake system(s) are for equipping in all vehicles, automobiles, cars, trucks, buses, vans, trains, motor-vehicles, motorcycles, airplanes, ships as anti-collision system(s) to stop accident(s).

[0008] The system composes of essential parts: Radars, sensors, wire/wireless detectable devices, infrared (detector) lenses, cameras, projectors, detectors, electronic eyes, lighting sensors, motion sensor detectors, sensor video cameras and/or any other similar devices to detect, having heating effect against snow, motors or equivalents, electric wires, contacts, button(s) for driver use, switches, support springs, yellow or red signal lamps, thermostats, message recorders, different types of pedal parts, rubber boots & covers, springs, accessories, and structure triangle wheel: Triangle wheel, inner triangle wheel, ball bearing, pin, spring, moving ball, frame, arm, lock iron switches, structure triangle wheel Duo: Triangle wheel, lock device, bracket arm, arm, spring, pin, ball bearing, iron bar, bracket, frame, structure triangle wheel Du: Triangle wheel, lock device, bracket arm, frame, outer or inner rewind spring, bar, arm, wheel arm, bracket, switch device, structure round wheel Duo-A: Round wheel, outer or inner rewind spring, bracket arm, arm, iron bar, lock device, structure round wheel Duo-a: Round wheel, frame with bar, springs, ball bearing with pin, frame with moving ball, lock devices, inner round wheel, structure screw & unscrew Duo-B: Toothed spindle, frame with gear-nut, lock device, springs, structure axis-gear Duo-C: Axis in groove end part, gear, frame with short tube outlet, rewind springs, spring, lock device, structure extra outlet Duo-D: Extra outlet, round wheel, connecting rod kit with roller & ball bearings, spring, lock device, structure moving frame Duo-E: Extra outlet, round wheel, connecting rod kit with roller & ball bearings, spring air releasing unit, moving frame, rubber cover wheel in double pulley, bearing, oscillator, spring, lock device, hose, structure bracket drive Duo-F: Hidden frame, iron bar, rectangular bracket, springs, lock device, pin, structure direct spin Duo-G: Iron bar, inner wheel, outer or inner rewind spring, lock device, structure oval wheel Duo-H: Oval wheel, outer or inner rewind spring, bracket arm, iron bar, lock device, structure hexagonal wheel Duo-I: Hexagonal wheel or equivalent, inner hexagonal wheel, outer or inner rewind spring, bracket arm, iron bar, lock device, lock device; a bar/rod, spring, bracket, cable, button, mini-motor, equipments, instruments having braking effect; movement of force by motor, by air, by wind, by spring, by energy, of air

hydraulic/oxygen (unit), of air/liquid pump, of cylinder as nut & piston as bolt with induction coils, others., braking objects as wheels, spindle, axis, rod, oscillator moving frame, bracket drive and/or any braking objects, parts, a revert timer, automatic stop control lamps, Detectable automatic braking system, automatic water switches, automatic voice sounding device, automatic lower speed system. automatic alarm system, sonorous (signal) alarm, automatic braking units, entire braking system network, electrical circuit connection, automatic lock device, automatic releasing unit, automatic brake pedal/new pedal/extra brake outlet rod and automatic safety system, operative device, the original elements, composition, function, structures, process of making, contents, illustrations, installation, of the invention in these documents, any other structures, modifications, replacement of parts, similar devices referring to their original fundamentals, combining the invention with any other device(s) and/or system(s) using other name(s) are in the scope of the protection of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0009] FIG. 1: Triangle wheel is equipped with motor
- [0010] FIG. 2: Different views of triangle wheel
- [0011] FIG. 3: Structure Duo (7A)
- [0012] FIG. 4: Structure Duo (7B)
- [0013] FIG. 5: Different views of structure Duo
- [0014] FIG. 6: Structure Du (7A)
- [0015] FIG. 7: Structure Du (7B)
- [0016] FIG. 8: Different views of structure Du
- [0017] FIG. 9: Structure Du with double spin motor (7B)
- [0018] FIG. 10: Different views of structure Du d.s.m.
- [0019] FIG. 11: Round wheel structure Duo-A
- [0020] FIG. 12: Different views of structure Duo-A
- [0021] FIG. 13: Round wheel structure Duo-a
- [0022] FIG. 14: Different views of structure Duo-a
- [0023] FIG. 15: Screw & Unscrew structure Duo-B
- [0024] FIG. 16: Different views of structure Duo-B
- [0025] FIG. 17: Axis-gear structure Duo-C

[0026] FIG. 18: Different views of structure Duo-C
[0027] FIG. 19: Extra outlet structure Duo-D
[0028] FIG. 20: Different views of structure Duo-D
[0029] FIG. 21: Moving frame structure Duo-E
[0030] FIG. 22: Different views of structure Duo-E
[0031] FIG. 23: Bracket drive structure Duo-F
[0032] FIG. 24: Different views of structure Duo-F
[0033] FIG. 25: Direct spin structure Duo-G
[0034] FIG. 26: Different views of structure Duo-G
[0035] FIG. 27: Oval wheel structure Duo-H
[0036] FIG. 28: Different views of structure Duo-H
[0037] FIG. 29: Hexagonal wheel structure Duo-I
[0038] FIG. 30: Different views of structure Duo-I
[0039] FIG. 31: Entire braking system network
[0040] FIG. 32: Electrical circuit
[0041] FIG. 33: Braking system network
[0042] FIG. 34: Red or yellow lamp and its function
[0043] FIG. 35: Safe protection cover
[0044] FIG. 36: Various types of new pedal
[0045] FIG. 37: Other types of new pedal
[0046] FIG. 38: Extra outlet rods and braking motors
[0047] FIG. 39: Automatic braking pedals
[0048] FIG. 40: Further automatic braking pedals
[0049] FIG. 41: Detecting distance of radars J1a & J1c
[0050] FIG. 42: Automatic water switch
[0051] FIG. 43: Automatic stop control lamp

DETAILED DESCRIPTION OF THE INVENTION

[0052] Automatic brake system and Back driving automatic brake system are of anti-collision system(s) to avert accident. FIG. 31: Radar(s) or sensor(s) J1b is for equipping at rear motor-vehicle, it reacts to detect/sense at near distance only if driver backs his motor-vehicle,

having the same function and electrical connection as motor-vehicle backing light while the other radars or sensors J1a and J1c are fixed on the top of front motor-vehicle or hidden part in its front at a position to avert direct lighting flashing to it from opposite running motor-vehicles to maintain its proper functioning particularly at night time. Once obstruction is detected/sensed, radar(s)/sensor(s) J1 reacts automatically to switch braking motor on to brake the motor-vehicle immediately JB to stop accident.

[0053] We may use the following devices having the same detectable results: Radar, sensor, detectable device, infrared lenses, camera, projector or any other similar device(s). The invention(s) includes by nature the original fundamentals as well as elements of Back driving automatic brake system and Automatic braking system or any other structure(s), modification(s), replacement of part(s) assembling to make up the same system(s) or to perform similar system(s) referring to their original fundamentals to the same effect, combining the invention with any other device(s) or system(s) by changing its name or not, contents, structures, illustrations and/or process of making the invention in these documents.

[0054] FIG. 1; structure triangle wheel: 7A radar(s)/sensor(s) reacts to brake, there is a ball bearing 5 with pin 4 fixed firmly at the surface of wheel 3 nearby its flat part corner where a spring 6 is fastened from pin 4 to a moving ball 10 of motor frame 8 pulling wheel at the right position after each spin so as to unlock the brake pedal 1 at 7B on FIG. 2. FIG. 2: We set three iron switches 17 or similar locking device(s) inside motor at position(s) to turn motor off prior to locking at edge points of an inner triangle wheel 16 at braking position. We fix motor 2 between two strong springs 9 to support its spin, motor is linked with arm 2a at its end to frame 8 letting motor moving at its specific position. FIG. 32: Button J2c or J2e is utilized to switch motor on rotating at the same spin or opposite spin to release the brake.

[0055] FIG. 3; triangle wheel structure "Duo": 7A once radar(s) or sensor(s) functions, FIG. 4 at 7B triangle wheel Duo3 turns to brake on pedal part Duo1, it will be locked by motor lock device Duo10 to its bracket arm Duo7 at braking position after motor Duo2 is turned off by switch Duo11, motor is linked with a spring Duo6 to pull triangle wheel by its pin Duo4 rotating a ball bearing Duo5 for back spin. Releasing is drawn by driver's button J2d rotating wheel to iron bar Duo13 blockaded at wheel bracket Duo12 (FIG. 5). FIG. 5: We fix motor

between two supporting springs Duo9 ending with an arm Duo2a to the frame Duo8.

[0056] FIG. 6; triangle wheel structure “Du”: 7A motor Du2 has its triangle wheel Du3 to brake on pedal part Du1, FIG. 7: Braking 7B is locked by lock device Du7 to wheel bracket arm Du11 after turning off by switch Du8, driver's button J2d is drawn for releasing. FIG. 8: Motor ending with arm Du2a is fixed by two springs Du10 in a frame Du9, back spin is by outer or inner rewind spring Du4 rotating to blockade wheel arm Du5 to motor bar Du6.

FIG. 9: 7B if a double spinning motor is used replacing rewind spring, we draw driver's button J2e-Du13 on releasing and FIG. 10: Wheel bracket Du12a will be locked at switch device Du13a turning motor at back spin off. Radar(s)/sensor(s) functions as usual.

[0057] FIG. 12; round wheel structure “Duo-A”: JA we equip a round wheel A3 to brake, motor axis is particularly fixed at the border between center and rim of the wheel. Radar(s) or sensor(s) reacts, motor A2 which rotates to brake JB or JB(1) holds a lock device A5 out to lock its wheel A3 by blockading its bracket arm A7 after motor is turned off by switch A4 at its braking summit spin. Outer or inner rewind spring A8 is for back spin, motor is fixed between two supporting springs A9 in the frame A10. It ends with an arm A2a moving at specific position, releasing is drawn by driver's button J2d. If we use a motor turning at both sides: It turns one side to brake and turns the other side to release pedal part A1 or A1a by driver's button J2e, rotating wheel to switch A6 off.

[0058] FIG. 14; round wheel structure “Duo-a”: JA braking motor a2 places at a frame with springs a1 to support its movement at single spin. There is a ball bearing with pin a4 fixed firmly at the surface edge of round wheel a3 where a spring a5 is fastened from pin to a moving ball a6 of motor frame a7 pulling the wheel at right position to unlock the brake. Switch a10 is set at position to turn motor off prior to locking inner wheel a9 by two lock devices a8 at braking position JB or JB(1), inner wheel has four locking holes a11, lock devices will lock at either first line or second line of two holes based on motor rotating at off speed. We switch driver's contact J2c (FIG. 32) on rotating to release the brake and function is by radar(s) or sensor(s).

[0059] FIG. 16; screw & unscrew structure “Duo-B”: JA motor B2 is installed in spring B11

supporting frame B7 with nut B5 as its outlet, since toothed spindle B3 of motor engages with and through this gear-nut B5, radar(s) or sensor(s) functions, motor moves in its frame and spindle screws out braking against pedal part B1 at JB or automatic brake pedal Bla at JB(1), switch B4 turns off motor which will be locked by lock device B6. Spindle slots into spring B8 before inserting to gear-nut or a spring B9 is fixed at the end of motor for its return spin releasing by driver's button J2d. If double rotating motor is used, driver's contact J2e is to release at return spin, a switch B10 is added letting back spinning motor off JA(1).

[0060] FIG. 18; axis-gear structure "Duo-C": JA we install motor between supporting springs C14, it is fixed a frame C8 with a short tube outlet C5 where an axis engages in it, this axis C3 has its groove end part connected with a gear C4 of motor C2, spin is its braking action against pedal part C1 at JB. Switch C7 turns motor off prior to locking at device C6 or equivalent during braking, return spin can be used by either outer/inner rewind spring C9; spring C10 linking at axis end to the frame or rewind spring C13 of automatic brake pedal C12 at JB(2), releasing is by driver's button J2d. If we use double revolving motor, releasing is by driver's contact J2e and JA(1) switch C11 is to turn motor off at back spin. Function includes sensor(s) or radar(s).

[0061] FIG. 20; extra outlet structure "Duo-D": JA another suggestion is to build an additional outlet device from original booster/master cylinder besides the brake-by-pedal one, this outlet D1 possesses spring of force to push its rod out before braking. Rod D4 functions a connecting rod kit D5 with roller D8 & ball bearings D9, it is fixed at the border between center and rim of a round wheel D3, this wheel engages a right & left spinning motor D2 with support spring D10. Radar(s) or sensor(s) directs braking JB then motor will be turned off by switch D6 prior to locking at device D7, releasing is by driver's button J2e at back spin. If a strong spring is equipped at extra outlet for back spin, a simple motor can be utilized with button J2d releasing.

[0062] FIG. 22; moving frame structure "Duo-E": JA extra outlet E1 & complete connecting rod bearing kit with spring E3 in an air releasing unit E2 can place on a moving frame E4 with a rotating wheel centered to a ball bearing E5. This wheel E6 will automatically connect JB (to brake) and disconnect JA(1) (to release) to a rubber cover wheel E7 manufactured as a part of double pulley E8 rotated by car/any engine E9 to replace a motor. Sensor(s) or radar(s) commands oscillator E10 (with spring) to move the frame braking as well as releasing, braking

is locked by lock device E11 which will be unlocked JA(2) by driver's contact J2d. Certain part of fluid pipe needs changing to hose E12 for moving adaptation.

[0063] FIG. 24; bracket drive structure "Duo-F": JA we simply lock two springs F6 from a frame F3 to both ends of the frame covered bar F4 which holds a pin F10 moving in its frame cavity, a rectangular bracket F5 is fixed therein to drive it, its outer part is against pedal part F1 or automatic brake pedal F1a. Motor F2 with support springs F9 drives its bracket to brake and spring force releases. A switch F7 places at the end of bar to turn motor off before the bar is locked by lock device F8 during braking at JB or JB(1) under function of radar(s) or sensor(s), driver's button J2d is for releasing.

[0064] FIG. 26; direct spin structure "Duo-G": JA spring supporting G10 motor G2 is equipped next to pedal part G1 or automatic brake pedal G1a with its bar G3 to brake, outer or inner rewind spring G5 releases. Device G6 locks its inner wheel G7 when radar(s) or sensor(s) operates to brake JB or JB(1) in which motor has adjustable position G9, it will be turned off by switch G4 prior to locking, driver's button J2d is drawn to release. If we use a double rotating motor at back spin, we release at contact J2e to switch G8 off.

[0065] FIG. 28; oval wheel structure "Duo-H": JA radar(s)/sensor(s) is to detect/sense, oval wheel H3 of support spring H9 motor H2 brakes at pedal part H1 or automatic brake pedal H1a, outer or inner rewind spring H4 is for back spin, the wheel has a bracket arm H5 to blockade itself at motor iron bar H6. Lock device H7 locks its wheel after motor is turned off by switch H8 during braking at JB or JB(1), driver's button J2d is drawn to release. If we use double spinning motor, contact J2e is for releasing and a switch off H10 is added to motor bar for back spin.

[0066] FIG. 30; hexagonal wheel structure "Duo-I": JA hexagonal wheel I3 or equivalent equipped supporting springs I10 with motor I2 is to brake on pedal part I1 or automatic brake pedal I1a, back spin is by outer or inner rewind spring I4, wheel has a bracket arm I5 to blockade itself at motor iron bar I6. Radar(s) or sensor(s) functions, inner wheel I9 locks at device I7 during braking JB or JB(1) after turning off by switch I8, releasing is by driver's button J2d. If we use double spinning motor, contact J2e is for releasing and a switch off I11 is added to

motor bar for back spin.

[0067] FIG. 31 shows entire braking system network and electrical circuit of the control unit J5. FIG. 32 is a diagram of electrical connection of driver contacts J2 to red or yellow signal lamp J3 and braking system standby J4b1 & braking system movement J4 b2.

[0068] Brake motor is fixed between supporting springs in which appropriate motor is used rotating to brake at a speed efficiently fast to halt transportation/motor-vehicle running, if motor spinning at both sides is used; one spin side to brake and the other side to release at low speed replacing spring force, switch turns brake motor off prior to braking and locking in lock device, lock device; it has a bar/rod under spring force for pushing it over edge point of an opposite bracket of locking part being blockaded in it as locking and one end of rod is linked to cable to be released by drawing as on Du7, J2e of FIG. 9 and D7, J2d of FIG. 20, of lock device.

[0069] Once obstruction is sensed/detected, sensor(s)/radar(s) or detectable device(s) automatically reacts both operating of motor braking and pressing button standby of mini-motor which will rotate to draw lock device resulting from earlier pressing action releasing the brake automatically just after sensor(s)/radar(s) senses/detects free, of automatic releasing process.

[0070] An appropriate motor will brake its car fast enough to stop its running. If a double rotating motor is used, it should have low speed at back spin. FIG. 32: Button J2c is utilized to switch motor on rotating to release braking unit "c", button J2d is drawn releasing braking unit "d" and button J2e is for releasing braking unit "e".

[0071] Automatic braking unit brakes at the opposite side of pedal, however it depends on structure of vehicle, braking motor A.B. may be equipped at any position to brake against new pedal from L1 to L9 on FIG. 36 and L10 to L14 on FIG. 37 provided it is covered safely. FIG. 35: It is to be fixed rubber boot K4 or covers K2 and K3 under pedal K1 for safe protection under automatic braking movement.

[0072] Certain types of braking motor A.B. can well be placed to brake against additional outlet

braking rod besides original booster/master cylinder one in a choice of up to eight positions: L15 to L22 on FIG. 38. Furthermore, FIG. 39 and FIG. 40 provide 15 types of automatic braking pedal from L23 to L37 for proper automatic braking use without causing the movement of vehicle pedal L shown at FIG. 39. The entire braking structure(s) can be modified by pulling to brake instead of pushing actions to the same effect. Braking is used their main part(s) wherein or movement of any other equipment(s), instrument(s) having braking effect; as using movement of force by motor, by air, by wind, by spring, by energy, of air hydraulic/oxygen (unit), of air/liquid pump, of cylinder as nut & piston as bolt, with induction coils and/or other(s), braking object(s) include(s) wheel(s), spindle, axis, rod, oscillator moving frame, bracket drive and/or any other object(s) with same effect, using sensors or any other wire/wireless detectable devices as radars, infrared (detector) lenses, detectors, electronic eyes, lighting sensors, motion sensor detectors, sensor video cameras, others, having heating effect against snow, parts and accessories.

[0073] FIG. 34: Red or yellow sonorous signal lamp/message recorder J3 is "on" showing/speaking to driver while entire system J4 is "off". FIG. 32: Driver may switch off the entire system by driver's contact J2b to J2a when necessary or driver finds impossible to balance his car on ice-covered road in winter snow if braking operates, a thermostat should so be installed to disconnect operation of yellow signal lamp/message recorder, of automatic safety system.

[0074] FIG. 42: Automatic water switch M1 is installed to be connected by raining water M7 in an open box/container between electric wire of second front sensor/radar of longer distance detection and that of automatic braking unit for earlier stopping transportation/motor-vehicle running on wet when it rains M6 to turn sensor/radar J1c on, it has isolated M3 part(s) of electrical wire M2, water will flow down at a level outlet M5 from plastic container M4. The wind M8 will blow drying water to extinguish the function of sensor/radar J1c after raining is over.

[0075] FIG. 41: Two radars/sensors are set separately or combined in one unit on the top of front car or somewhere in/on its front at a position level to prevent direct beam lighting/flashing from running cars at opposite side at night time, J1a radar/sensor has capacity to detect/sense at certain distance while J1c detects/senses longer distance to react earlier to stop car

running on wet and slippery road when it rains. Technically, an extra front radar/sensor should be equipped on/in motor vehicle detecting/sensing and connecting device to sound/speak sonorous signal lamp or recorded message to driver at the earliest among these radars/sensors. Once obstruction is detected/sensed by this radar/sensor, driver may lower motor-vehicle speed before automatic braking operates, of automatic voice sounding device.

[0076] Once obstruction is sensed/detected, the third sensor/radar automatically reacts both motor braking to brake to lower car speed safely at a longer distance and mini-motor rotating to draw cable/any to unlock lock device releasing while radar(s)/sensor(s) detects/senses free, or a second braking unit without lock is used for third sensor/radar, in which a revert timer is installed to switch third sensor/radar off for certain minutes letting motor-vehicle approach closer during heavy traffic, of automatic lower speed system.

[0077] Detectable automatic alarm system(s) using for engine and motor vehicles of any kind(s) including automobile(s), cars(s), truck(s), bus(es), van(s), train(s), motorcycle(s), airplane(s), ship(s) and/or other(s), including:

(1) Extra sensors/radars or detectable devices are equipped on right & left mirrors/sides of motor-vehicle/transportation, sensor(s)/radar(s) back sensing/detecting during turning for connecting sonorous (signal) alarm or voice device (on indicator) to sound/speak to driver if rear motor-vehicle/transportation is sensed/detected by sensor/radar at a distance while signal turning lamp is on.

(2) Small sensors/radars or detectable devices are equipped at both sides of a motor-vehicle/transportation connecting device to sound sonorous alarm or speak recorded message to driver/user and indicator showing color signal lamp: right or left side is sensed/detected once running motor-vehicles/transportations extremely approach each other.

[0078] Detectable automatic braking system(s) is for equipping in motor & engine vehicle(s) of any kind(s) including automobile(s), car(s), truck(s), bus(es), van(s), train(s), motorcycle(s), tank(s), airplane(s), ship(s) and/or other(s) in which sensor(s)/radar(s) or detectable device(s) is installed on/in transportation to sense/detect at a distance on traveling way and respond by sensed/detected result against obstruction to automatic braking unit to perform automatic braking by itself automatically to stop traffic accident. Referring to the above-written

structures, elements, drawings and interacting function, Detectable automatic braking system comprises front and rear radars/sensors/operative devices, automatic water switch, automatic voice sounding device, automatic lower speed system, detectable automatic alarm system, one(s) of automatic braking units (“Triangle wheel”, “Duo” to “Duo-I”), entire braking system network, electrical circuit connection, automatic lock device, automatic releasing unit, automatic brake pedal/new pedal/extra brake outlet rod and/or automatic safety system for constructing an operative device.

[0079] FIG. 43: Normal traffic green red light should likewise be modernized to be an absolute security device in traffic control system. Automatic stop control lamp N1 is a particular flash/color lighting lamp or similarity installed adding to traffic sign (green red light) in a position to focus its beam at lighting zone limit on red to stop motor-vehicles advancing by reacting the operation of their automatic braking units of front radars/sensors of motor-vehicles.

[0080] The invention(s) in these documents covers the original elements, composition, function, structures, process of making, contents, illustrations, installation, any other structure(s), modification(s), replacement of part(s) assembling to make up the same system(s) or to perform similar device(s) referring to their original fundamentals to the same effect, combining the invention with any other device(s) and/or system(s) using any naming are in the scope of the protection of the invention, the invention be used everywhere.